

Claims

1. A self-locking mechanism of a manually tightened drill chuck, including a ratchet wheel (2), a clamp bearing (4), at least one elastic pawl (5), and a clip ring (7), characterized in that:

said ratchet wheel (2) is fixed in connection with a main unit (1) of said manually tightened drill chuck, and on its back there are provided ratchet teeth (20) facing the end surface of said main unit (1);

said clamp bearing (4) is fixed in connection with the outside surface of a screw ring (3) on said manually tightened drill chuck, and the end surface of this clamp bearing (4) is provided with at least one ratchet wheel slot (41);

said elastic pawl (5) is fixed on said ratchet wheel slot (41), and it includes a protuberance (50) and a tooth piece (52); and

said clip ring (7) includes at least two arc segments that can mutually antagonistically snap onto the front end position of said main unit (1), the outer perimeter surface of this clip ring (7) is fixed in connection with a front cap (6) of said manually tightened drill chuck, said clip ring (7) is connected with said clamp bearing (4) and drives said clamp bearing (4) to rotate, and the end surface of said clip ring (7) is provided with deep and shallow recesses (71, 72) for receiving the protuberance (50) on said elastic pawl (5).

2. A self-locking mechanism of a manually tightened drill chuck as described in Claim 1, characterized in that the end surface of said clip ring (7) is provided with at least one protuberance (70), and the end surface of said clamp bearing (4) is provided with a recess (40) corresponding with this protuberance and having a width larger than the protuberance (70).

3. A self-locking mechanism of a manually tightened drill chuck as described in Claim 1, characterized in that the end surface of said clip ring (7) is provided with at least one recess (73), and the end surface of said clamp bearing (4) is provided with a protuberance (43) corresponding with this recess and having a width smaller than the recess (70) [sic].

4. A self-locking mechanism of a manually tightened drill chuck as described in any of Claim 1 to Claim 3, characterized in that said ratchet wheel (2) is integrally formed with said main unit (1), and said ratchet teeth (20) are directly formed on the end surface of said main unit (1).

5. A self-locking mechanism of a manually tightened drill chuck as described in any of Claim 1 to Claim 3, characterized in that the outer perimeter surface of said clip ring (7) is tight-fitted with said front cap by means of a raised rib and a recess.

6. A self-locking mechanism of a manually tightened drill chuck as described in any of Claim 1 to Claim 3, characterized in that the inner perimeter surface of said clamp bearing (4) is tight-fitted with the outer perimeter surface of said screw ring (3) by means of a raised rib and a recess.

7. A self-locking mechanism of a manually tightened drill chuck as described in any of Claim 1 to Claim 3, characterized in that said ratchet teeth (20) are substituted by recesses, pits or holes.

8. A self-locking mechanism of a manually tightened drill chuck as described in any of Claim 1 to Claim 3, characterized in that said elastic pawl (5) is fixed in connection with said clamp bearing (4) by welding, riveting or adhesion method.

9. A manually tightened drill chuck, characterized in that it includes a self-locking mechanism described above.